The contributions of cross- and self-fertilization to invasion in *Lilium formosanum*

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Experimental evidence of the influence of pollination and breeding systems on invasion is scarce. This study investigates the relative contributions of self and cross fertilization to invasion using invasion of *Lilium formosanum* in KwaZulu-Natal, South Africa, as a model system. A controlled pollination experiment showed that this species is self-compatible and autogamous. Observations and a day–night pollination experiment show *Agrius convolvulus*, a large hawkmoth, is in all likelihood the only pollinator of any importance. Pollen supplementation and emasculation experiments carried out over a range of population sizes show slight pollen limitation and suggest that selfing provides considerable reproductive assurance.

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Prolongation of soybean (*Glycine max* (L.) Merr.) nodule lifespan under drought stress

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Active N_2 fixation of soybean nodules is highly sensitive to drought stress. In nitrogen poor soils, water deficit causes premature senescence of nodules. As a consequence, general plant performance is impaired, seed quality and yield are reduced. A joint project between the University of Pretoria, the University of Limpopo and Rothamsted Research in the UK focuses at the elucidation of processes responsible for limited life time of soybean nodules under drought stress. Microarray experiments comparing young and senescing nodules will reveal key players of the senescence process. Cysteine proteases are highly expressed during natural and stress related senescence processes, and they are also considered to be important in nodule senescence. The LEGIM project will examine the role of specific cysteine proteases induced in the drought stressed nodule. Transgenic approaches reducing the activity of cysteine proteases by expression of specific cysteine protease inhibitors will be used to prove the significance of the specific proteases under drought related senescence processes.

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Specialized pollination by spider-hunting wasps: A new pollination system for South Africa

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Specialized pollination by spider-hunting wasps (Hymenoptera: Pompilidae) is only known to occur in South Africa. Although published examples exist for only four plant species (3 milkweeds and one orchid), specialized pollination by pompilids is far more widespread, and is also known to occur in two species of *Eucomis* (Hyacinthaceae), *Satyrium microrrhynchum* (Orchidaceae) and a number of other milkweed species. Four species of wasp belonging to the genus *Hemipepsis* are involved. Pompilid-pollinated flowers are typically cryptic and wasps are attracted primarily by floral scent. Other characteristics common to these flowers include dull greenish colouring (often with purple blotches) and copious amounts of exposed and highly concentrated nectar (c. 60–80% sugar). Preliminary investigations suggest that plants achieve specialization through specific scent compounds and toxic nectar. Further investigation of convergent traits in pompilid-pollinated flowers could lead to the formal description of a pompilid wasp pollination syndrome in South African grassland plants.

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Population dynamics of *Millettia stuhlmannii* Taub. population of Ha-Makhuvha, Vhembe district in Limpopo Province

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In the past, several inadvertent or indirect controls and some intentional management practices facilitated the sustainable use of natural resources. *Millettia stuhlmannii* population which is found at Ha-Makhuvha in the Limpopo province is being utilized only for medicinal purposes under close supervision of the tribal authority. The tribal authority is the custodian of this important medicinal plant. The fact that the population is still intact can be attributed to the indigenous practices around the collection and usage of the species. Myths and rituals are some of the factors that contribute towards the maintenance of the species up to this age. The population dynamics of the species will help in understanding its future. It will show if indeed the indigenous conservation techniques are able to sustain the population as a whole.

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